# Environmental turbulence and the role of business functions in the manufacturing strategy debate: the case of UK-based SMEs and the Great Recession


## ABSTRACT

This study provides an empirical assessment of the United Kingdom (UK) manufacturing small and medium-sized enterprises (MSMEs) sector, exploring the impact of environmental turbulence specific to the post–Great Recession (2008) era on changes to the way manufacturing strategy is formulated and implemented. The study identifies changes to the frequency, fluidity, formality and focus of manufacturing strategy review and how the various business functions play a changing role in contributing to this strategic process. A mixed-methods research approach is applied, incorporating a survey of 104 UK-based manufacturing SMEs supported by 17 in-depth interviews with senior managers. The research uses a parallel mixed analysis of the two data sources, thereby offering an alternative to the mono-quantitative approaches to manufacturing research that have dominated. The findings show that during, and emerging from, the post–Great Recession environment, the majority of manufacturing SMEs employ a fluid, highly frequent approach to manufacturing strategy review with increasing contributions from their marketing, sales and finance business functions driven predominantly by function-specific response to changes in the external environment, although internal drivers sill influence high-level strategy, finance and human resources. The implications of the study to theory, practice and general management suggest that the MSME sector is dominated by organizations experiencing continual impact from the external environment.



**Keywords:** Manufacturing SMEs, manufacturing strategy review, business functions, environmental turbulence.


## 1. INTRODUCTION

The manufacturing sector makes a substantial contribution to the global economy both in terms of economic output and employment opportunities. Manufacturing firms in the United Kingdom employ 2.6 million people, contribute 10% to the nation's gross value added (GVA) and account for 44% of its exports (EEF, 2017). Since the global economic downturn of 2008-09 investment in rebalancing the UK economy has become a priority for successive British governments. Consequently, a number of industrial policies have been implemented resulting

in the country regaining its position as the 9th largest contributor to the global output of manufactured goods (Rhodes, 2016).

The paper has a particular interest in the environmental turbulence caused by the Great Recession of 2008. The Great Recession had a profound impact at both national and global level extending from households to corporates and sovereigns. At the time of writing a decade later the aftershocks of the Great Recession have shaped a volatile geological environment defined by the high levels of sovereign debt, consolidation of the banking sector and a decline in household income for the most developed nations.

Small and medium sized enterprises (SMEs) are typically defined as any business not exceeding 249 employees (Ward and Rhodes, 2014). Research on the impact of the 2008 Great Recession on manufacturing SMEs (herewith MSMEs) has enjoyed moderate consideration within the academic literature. Studies have typically concentrated on access to finance and various dimensions of strategy development, particularly market and product development (Kitching et al., 2009a; Cowling et al., 2012; Smallbone et al., 2012; Cowling et al., 2015). Research on past economic recessions and SMEs has focused on the long-term impact (time lag) of recessions on market conditions and SMEs survival strategies (Smallbone et al., 1997) as well as how organisational robustness is achieved through strategic, operational and structural reconfiguration and flexibility (Churchill and Lewis, 1984; DeDee and Vorhies, 1998). Lai et al., (2016) recently reviewed the effect of the Great Recession on UK-based SMEs, their study identified a number of strategic impacts on human resource decisions. Academic research on how SMEs have adjusted their business models due to environmental turbulence caused by recessions and in particular since the Great Recession of 2008 has been expanding although publications on MSMEs are still limited with several literature gaps that need exploring further.

This paper seeks to complement previous SME-centred studies on environmental turbulence and economic recessions with a focus on UK-based MSMEs. The paper takes the Great Recession as a reference point in the global economic development path. This particular reference point drives the attention of the paper around two themes: (1) process and frequency of manufacturing strategy review, and (2) the characteristics and change in intensity of the role played by the various business functions in contributing to manufacturing strategy. The business functions assessed within the second theme are: (i) top management team, (ii)

marketing and sales, (iii) finance, (iv) supply chain management, (v) human resources and (vi) research and development.

Research on the interrelationship between manufacturing and other business functions has mainly focused on the cooperation between manufacturing and marketing (Toone, 1994; Da Silviera and Souza, 2010, Lee et al., 2014; Kong, 2015). A research opportunity therefore exists to respond to the literature gap on the broader functional relationships within MSMEs. Moreover, the intensity and relevance of these inter-relationships is an additional area that has been under-explored in the SMEs and manufacturing and operations strategy literature. The work presented here aims to address these research gaps making use of our primary data. The analysis of the data is supported by a discussion of the key findings aiming to capture what this functional involvement change comprises and represents, as well as seeking an understanding of its key determinants.

The work presented here is based on a mixed method research approach, comprising a survey of senior managers from 104 UK-based MSMEs which is supported by 17 in-depth follow up interviews from the surveyed senior managers. It is worth noting that the majority of studies in the subject of manufacturing and operations strategy are based on quantitative data. The present study makes use of a mixed methods research approach which offers advantages in terms of data richness and triangulation (Tashakkori and Teddlie, 1998). The study also fulfils the recommendation from the relevant literature for implementing mixed methods research within the subjects of manufacturing and operations management (Boyer and Swink; 2008; Barratt et al., 2011, Chatha et al., 2015).

## 2. LITERATURE REVIEW

### 2.1. Impact of environmental turbulence on MSMEs strategy

Strategic uncertainty stemming from the external or internal organisational environment has been widely discussed within the business and management academic literature, from the earlier work by Ward et al. (1996) and Geroski and Gregg (1994, 1997) to the more recent paper by Price et al (2013). Organisational survival is viewed as being very much dependent on the response and adaptation of the organisation to its business environment factors (Dreyer and Gronhaug, 2004). Collecting and analysing information on the changes and potential direction

of the business environment is essential for organisations in order to survive and seek growth opportunities (Oreja-Rodriquez and Yanes-Estevez, 2010).

Within the business and management literature the term "*business environment*" is typically defined by the following three variables:

- *"Environmental turbulence"* (also known as "*environmental uncertainty"*) which represents the rate of change and innovation in the industry, and the uncertainty or unpredictability of the competition and market swings (Ansoff, 1979; Miller and Friesen, 1983; Dess and Davis, 1984; Dugal and Gopalakrishnan, 2000; Kipley et al., 2012).
- *"Environmental hostility"* is defined by the degree of threat to the organisation developed by the multi-facetedness, vigour and intensity of the competition and the volatility in the industry (Miller and Friesen, 1978; Dess and Davis, 1984; Zahra et al., 2000).
- *"Environmental heterogeneity"* is characterised by the market diversity which the organisation serves, the diversity of which may require variations in manufacturing and marketing strategies (Khandwalla, 1972; Porter, 1980).

Macroeconomics uses the term "*business cycle*" to refer to ups and downs of economic activity. The "*down"* phase of the business cycle is typically characterised by an economic recession (Pearce and Michael, 2006). Recessions are defined as the economic period where national GDP (gross domestic product) performance is in decline over two successive financial calendar quarters (Vaitilingam, 2009). The present paper takes the Great Recession of 2008 and its impact on the UK economy as the mid-point of two business cycles: the first business cycle of 1992-2008 with a steady GDP growth for the UK economy; and from 2008-2013 as the second cycle defined by a long and deep recession and extensively volatile economic activity, the impact of which are still evident at the time of writing a decade later.

Merging the above definitions of "*business environment*" and "*business cycle*" we could define an *"economic recession"* or "*economic downturn"* as a feature of the wider term "*environmental turbulence"*. The term environmental turbulence may include the following features: forthcoming capital reductions and shortages (Cameron et al., 1987; Street et al., 2011), decline of market share taken up by overseas competitors (Cameron et al., 1988), high industry dynamics and structural hostility (Hall, 1980; Covin and Slevin, 1989; Kipley et al., 2012; Li and Lu, 2012), and general economic recessions (Ewaldz, 1990; Want, 1990; McCallum, 1991; Touby, 1991).

Covin and Slevin (1989:83) in their study on the response of US-located MSMEs to hostile business environments suggested that high business performance tends to positively correlate with "*an organic structure, an entrepreneurial strategic posture, and a competitive profile characterized by a long-term, goal-oriented approach to management, high product/service prices, and a concern for maintaining an awareness of industry trends*". The authors defined a "*hostile"* business environment by using a three-item scale developed by Khandwalla (1976/77) measuring: (i) risk/threat of survival, (ii) investment and marketing opportunities and (iii) level of control by business over competitive, political and technological forces. The scale also fits well with the definition of environmental turbulence. An organic business structure refers to internal attributes such as having open, flexible and informal control and management systems. Entrepreneurial strategic posture refers to adoption of innovation, pro-activeness, and risk-taking. These findings of Covin and Slevin (1989) were also supported by a recent study of the impact of the Great Recession on Finnish SMEs by Soininen et al. (2012); as such they are of strong interest to the study presented in this paper.

In addition to the above study by Covin and Slevin (1989) on the early 1980s US recession, several academic studies have been published on more recent recessions of the British economy.

Research on the early-1990s recession (Geroski and Walters, 1995; Geroski and Gregg, 1997) reported that large-size UK manufacturing organisations mainly focused on reducing costs through the reduction of human resources and manufacturing capacity. Size and range of product families in most cases stayed the same as prior to the recession experienced at the time. Investment in manufacturing equipment (e.g. machinery, automation) was also reduced, less so investment in innovation (R&D, training) and marketing (advertising). The latter also supports Geroski and Walters' (1995) findings of a reduction in patent applications during the early-1990s recession, which potentially resulted in a decline in product development.

The post-2008 Great Recession business environment however, shows a very different response by UK businesses in respect to their human resources policy. The Office for National Statistics (ONS, 2012) reports that unlike previous recessions UK employers kept their employment at high levels, which consequently had a negative impact on their productivity, given the weakness and fluctuation in market demand. The decline of labour productivity across UK industries has dominated government thinking and policies in the post Great Recession environment with

frequent references to the "productivity puzzle". Despite the declining productivity figures, the Chartered Institute of Personnel and Development (CIPD Outlook, 2012) in its 2012 Labour Market Outlook report confirmed that one third of the UK private sector maintained its staffing levels in order to preserve their human capital (skills and knowledge). Although it is unclear as to why such a high proportion of UK businesses kept their employment levels so high, given the accompanied costs and environmental uncertainty, some evidence suggests that high budget surpluses within the private sector accumulated since 2002 and the high costs associated with dismissing and hiring employees, made UK businesses decide to keep their human recourse levels close to pre-recession levels (ONS, 2012).

Kitching et al. (2009a, 2009b) in their study on the Great Recession and its impact on British SMEs identified product development initiatives as the most common business strategy to cope with reduced market demand. Interestingly, their findings show UK-based SMEs pursuing both revenue-generating (i.e. product development) and cost-cutting (i.e. conservation of resources) activities at the same time, i.e. an ambidextrous strategy as defined by Rumelt (2009) and Williamson and Zeng (2009). During recessions, organisations are under pressure to innovate which requires continued investment in R&D, training and intellectual rights, all being costly investments. The research by Kitching et al. (2009a, 2009b) concludes with the development of a typology classifying SMEs into three types according to their recession-coping strategies, these are listed below. The same authors conclude on the need for explanatory research which will offer an insight into business adaptation practices during economic downturns which this paper is addressing. In particular, they argue for further academic studies to explore the causes, processes and consequences of SMEs' strategies in reacting to economic recessions. Kitching et al. (2009a, 2009b) three-dimensional typology of UK-based SMEs defined by recession-coping strategies comprises:

- Severe-shock: a cost-cutting strategy aimed at the reduction of resource-related cost (human, premises, suppliers' payments) and increased customer focus and engagement by dealing directly with the end client.
- Limited impact: a market-development strategy aimed at increasing market share by investing in aggressive selling.
- No perceived impact: a consolidation strategy by maintaining existing product portfolio and market share.

Grewal and Tansuhaj (2001) and Hitt et al. (1998) have suggested that "*strategic flexibility"* during a recession offers opportunities for survival and growth. The literature defines strategic flexibility as two-dimensional: (i) as the organisation's ability to develop and coordinate production resources (Evans, 1991; Sanchez, 1995) and (ii) as the organisation's ability to defend against threats and exploit opportunities during economic and political crises (Grewal and Tansuhaj, 2001; Harrigan and Rudie, 1980). Strategic flexibility may entail a degree of strategic change. Strategic change is often a complex process, involving planning by business owners and senior managers, and entailing long-term consequences for business performance (Whittington, 1991; Geroski and Gregg, 1994). However, during recessionary periods, such strategic change may be short-term to allow for some resource flexibility and to cope with the temporary fall in product demand. This organisational flexibility can also be considered within wider supply chain literatures as "*agility*" (Sukwadi et al., 2013; Christopher and Towill, 2001; Mason-Jones and Towill, 1999).

Exploring the more practitioner-oriented literature there is stark empirical evidence that the global economic crisis of 2008 has brought a sharp decline in production output, product prices, earnings, productivity, company growth and investment for most UK industrial sectors (BDO, 2009). These business outputs are directly linked to the theoretical concept of manufacturing priorities comprising cost, quality, delivery performance and flexibility as defined by Miller (1986) and Ward et al. (1998), which in turn have traditionally formed the basis of the manufacturing strategy formulation process in order to achieve competitive advantage (Skinner, 1969). In addition, the Department for Business Enterprise and Regulatory Reform of the UK in its 2008 review (BERR, 2008) of the country's manufacturing strategy advocates the adoption of energy-efficient and waste-reduction production processes. These cost-cutting measures have become strategic objectives creating synergies between good commercial and environmental performance, offering sustainable competitive advantage. In comparison, the BERR's report of 2002 (DTI, 2002) on the UK's manufacturing strategy had a strong focus on investment in human resources and exploiting the (then) economic growth of the UK and European Union, which would have allowed the UK's manufacturing sector to develop new products and enter new geographical markets. It is therefore safe to suggest that the global economic crisis had an impact on the manufacturing strategy of UK businesses including the SME sector. From a theoretical perspective, this is also supported by Ward et al. (1996), who argue that manufacturing strategy, business environment and organisational structure are configured or linked to each other in such a way that these three elements influence each other

(with the exception of no relation existing between organisational structure and business environment). Adding to the work of Ward et al. (1996), Papke-Shields et al. (2006) have provided empirical research that suggests the manufacturing strategy formulation process is a mixture of "*adaptive*" and "*rational*" decision making depending on the degree of strategic change dictated by the dynamic of the business environment.

To conclude, Smallbone et al. (2012) highlight the contradictory impact of economic recessions expressed as hostile and volatile business environments, constraining some SMEs in achieving their business objectives, while for other SMEs they create opportunities for innovation and growth. In their review of the literature on the impact of recessions on business adaptation, Kitching et al. (2009a) argued for more exploratory research which will offer an insight into (i) the motivations for the particular strategies adopted, (ii) the conditions that enable or constrain such strategies and (iii) the impact on business performance.

## 2.2. Cross-functional manufacturing strategy formation process during environmental turbulence

The role of the manufacturing function and its contribution to the organisation's corporate strategy has been extensively debated within the manufacturing and operations management literature. With its initial conception by Wickham Skinner in the late 1960s and later by Hayes and Wheelwright (1984) who promoted the manufacturing function and its strategy as a source of competitive advantage, to more recent work by Kiridena et al. (2009) and Schroeder et al. (2011), manufacturing choices has remained a strategic priority within senior and executive management decisions and processes.

In addition to the role of manufacturing strategy within corporate strategy, there has been several academic studies on the relationship and integration of manufacturing strategy with other functional-level strategies. Most notable is the link between manufacturing and marketing strategies.

Skinner (1986), Toone (1994), Voss (1995), and Hill (2009) argued for the development of a closer link between the functional-level strategies of manufacturing and marketing. This allows for an efficient support of the organisation's corporate objectives. Hill (2009) claimed that in most cases the functional strategies are simply added together to form the corporate strategy, making a bottom-up approach. Papke-Shields et al. (2006) found that allowing independence

at functional level without coordination from the corporate level leads to inconsistent decisions. Functional strategies must reflect and serve each other's needs, limitations and strengths and achieve a mutual 'fit'. In an ideal situation, corporate strategy represents the mechanism that integrates business and functional strategies. According to Toone (1994), Weir et al. (2000) and Da Silviera and Souza (2010), corporate strategy should integrate marketing and manufacturing strategies. The integration of these strategies is essential for the organisation to become aware of and be able to meet its customer expectations, with Quality Function Deployment playing an important role in achieving this objective by making the voice of the customer more explicit in transforming it into engineered requirements whilst effectively shortening product development/product substitution cycles (Vinodh and Chintha, 2011). Corporate strategy may, at times, set the context and boundaries within which marketing and manufacturing strategies develop, and at other times it will respond to strategies made in those functions. Similarly, marketing and manufacturing are not in a fixed relationship to each other. Marketing may take a lead when a market opportunity is identified but manufacturing may take the lead when technological developments of either product or process can provide a competitive advantage.

The strong link between manufacturing and marketing has also been highlighted in a number of industry reports. Survey data collected by the market research company Ipsos MORI (Deltek, 2012) suggests a strong emphasis on marketing and customer relationships management by North European manufacturers. The study by Ipsos MORI finds 75% of UK manufacturers were expecting an average annual growth of 3% in their market, and therefore improving customer satisfaction ratings for their business is seen as a source of competitive advantage, which complements the points made by Toone (1994) and Da Silviera and Souza (2010) above.

Empirical evident suggests that a number of links exist between the manufacturing function and supply chain management, finance and human resources. The location, manufacturing capability and quality systems of suppliers play an essential role in accomplishing the manufacturing task (Harrison and van Hoek, 2011; Sharma and Yu, 2013), with the selection of suitable suppliers being the responsibility of the supply chain management function. Handfield and Lawson (2007) add the importance of including suppliers within the process of new product development (NPD). It is the supply chain management function that builds and maintains strong supply chain relationships, with corporate-level management supporting strategic partnerships with key suppliers. Manufacturing requires strong financial support to take advantage of process technology developments. It is the finance department that has

responsibility for identifying, evaluating and allocating (with prior corporate approval) capital investment (Baines et al., 2009; Schroeder et al., 2011). Financial management reporting systems allow for monitoring of manufacturing costs supported by process technology applications such as enterprise resource planning (ERP) systems (Hill, 2009). Where ERP systems are used, they may function as an information management tool to assist with human resource requirements within the manufacturing function. Whether such expensive and sophisticated ERP systems are used or not, manufacturing depends on the human resource management function for operational decisions around recruitment, training and payroll, but also strategic support for communicating new practices (e.g. cross functional teams as part of TQM) and targets (Jayaram et al., 1999).

To conclude the above literature review, we have defined and discussed the implications on MSMES of environmental turbulence as an aftermath of major economic recessions. The present paper comes as a response to calls by the literature for explanatory studies on the business adaptation practices during economic downturns (Kitching et al., 2009a, 2009b; Smallbone et al., 2012). In addition, the changing pattern of business functions was discussed above and how the manufacturing and operations function interacts with other business functions subject to the severity of environmental turbulence.

## 3. STUDY DESIGN AND RESEARCH METHODS

The mono-method approach to research has been dominant in academic studies relating to manufacturing strategy, with a dominance of quantitative research. Mixed methods approaches are notably few, but certain recent examples do exist (Kitching et al., 2009b; MacBryde et al., 2013). Mixed methods research has been chosen specifically for this study, to combine both qualitative and quantitative data collection, analysis and interpretation (Creswell and Plano Clark, 2011). The choice has been positively made to reduce the expected limitations of relying only on one of the methods, and in doing so, seeking to provide greater insight into changes in strategy development and the changing role of the business functions within the UK's MSME sector in the time period since the Great Recession. By doing so, the work answers requests for further qualitative-based research to be undertaken in manufacturing management (Boyer and Swink, 2008; Barratt et al., 2011), by including a qualitative dimension as part of the mixed methods research design.

The questionnaire-based instrument developed specifically for this study was commonly applied to both survey and interviews, this application being sequential (Creswell and Plano Clark, 2011), thereby permitting the Qualitative data generated by the interviews to complement the survey-driven QUANtitative. The QUAL data provided a rich textual input into the study findings that affords context to the individual-company responses as indicated on various balanced 6-point Likert scales within the QUAN data set. The employed parallel mixed analysis dictated interaction, influence and "*discussion*" between the two data sets (QUAN and QUAL) (Tashakkori and Teddlie, 1998). Greene et al. (1989) provide a useful five-dimensional conceptual framework on how individual QAUN and QUAL data can be integrated, these dimensions being: triangulation, complementarity, development, initiation and expansion. Specific to this study, the "*development"* dimension of design was applied. This development is located at the data interpretation stage of the analysis, with separate analysis stages for each QUAN and QUAL data set.

Access to the Kompass UK Business Directory allowed identification of potential research participants, this directory storing information for 2183 MSMEs accompanied by named organisational contacts. Contact was made with the named senior managers who were appropriate to the study because of their most likely familiarity with organisational strategy and associated decision-making within their respective MSMEs. Housing the developed survey instrument online, 104 complete and usable questionnaires were returned, a response rate resonant with the method of questionnaire dissemination and researcher relationship with the base of participants (Porter, 2004). This level of participation further compares in a positive sense to recent manufacturing studies regarding the number of records (Li, 2000; Amoako-Gayampah, 2003; Anand and Ward, 2004). The demographic profile of these MSMEs is listed as part of the findings.

All participants in the survey were given opportunity to engage in follow-up interviews, with 17 accepting this invitation and providing an average of 45 minutes interview time. The interviews captured a comparable broad representation of the MSMEs with respect to organisational size, sector, duration of business activity and turnover.

The survey instrument developed for this work captured various distinct areas of manufacturing consideration, two of which were on frequency of strategy review and the changing levels of involvement of the MSME executive and key business functions in the strategising processes,

represented respectively using 6-point and 7-point Likert scales, the latter ranging from "*constant involvement*" to "*no involvement*". The assessment of industrial, market and government policy changes were again assessed from the MSME perspective by means of balanced scales covering "*highly decreased*" to "*highly increased*". Vital to this survey instrument's development was Ethical clearance given by the researchers' University. This was granted given the inclusion of the necessary protocols for confidentiality, anonymity and data storage. The survey instruments were subject to piloting to ensure terminology, wording and instruction clarity, alongside assessment of completion time and participant understanding of the presented questions and issues.

Analysis of the QUAN data to be provided in the findings is centred on a descriptive analysis comprising summary statistics, percentage frequency distributions and graphical presentation affording a sector overview. In addition, further analysis was carried out in the form of correlation analysis involving the scales relating to both manufacturing strategy making and changes in the involvement of the top management team and the key business functions against various industrial, market and political movements perceived by the MSMEs as a response to the turbulent environment caused by the Great Recession. The scope of this analysis is line with various literature recommendations. Forza (2002) proposes in the case of surveys where non-representative samples are used, the application of preliminary data analysis comprising a frequency distribution of variables. Similarly, both Caracelli and Greene (1993) and Tashakkori and Teddlie (1998) suggest that where mixed methods are implemented, the component of quantitative analysis should include appropriate descriptive statistics to explore frequencies of variables.

It was assumed realistically within the study the number of despatched questionnaires together with an anticipated response rate would deliver a number of returned and usable questionnaires, that compared against associated MSME numbers within the various manufacturing sub-sectors, would prohibit meaningful tests for difference by sector experience. This represents an inevitable study limitation and one anticipated for a sector noted for lower rates of research participation (Dennis, 2003). Similarly, difference by size band, level of turnover and company age is omitted. This shortcoming is offset greatly by the detailed summary overview and correlation analysis coupled with the quality and volume of QUAL data generated by the time-rich and in-depth supporting interviews that complemented the survey.

The QUAL data was subject to template analysis (King, 2004). Template analysis method is a form of thematic analysis, but at the same time influenced by the more structured data analysis methods of grounded theory and interpretative phenomenological analysis (IPA), and can be used within a variety of epistemological positions (Waring and Wainwright, 2008). It is a relatively 'young' qualitative data analysis and has strong groundings in well-established data matrices-based methods, most notably those developed by Miles and Huberman (1994). At the same time, it offers a degree of flexibility permitting the researcher to adjust the tool of analysis (the template) to suit the requirements of the particular research project (King, 2004), which acts as an advantage over the more rigid qualitative analyses methods of grounded theory and IPA.

The combined QUAN and QUAL analyses permitted appropriate linkage and synthesis between the two components (Yin, 2006) around the rate of strategy formulation, key functional involvement and the impact of both internal and external changes relating to industry, market and policy and the extent and range of MSMEs' behavioural adjustments expressed in qualitative form relating to these various drivers and outcomes.

## 4. STUDY FINDINGS

### 4.1. Participant overview

The 104 participating MSMEs represent 4.8% of those targeted within the study and have the following characteristics:

- For size, 8% employ fewer than 10 people (micro), 52% employ 10-50 (small), 22% employ 51-100 staff, 13% employ 101-200, and 3% employ 201-250 (all medium sized MSMEs).
- For annual turnover, 64% of the MSMEs achieve between £0.5-£6.5 million, 29% have turnover in the range £6.5-£25 million.
- For ownership, 65% are independent and 35% a subsidiary or an operating unit within group of companies.
- For business maturity, 71 have existed 20-30 years, 11 are over100 years old, but only 22 having less than 20 years' experience.

In terms of manufacturing approach and primary business sector:

- The majority of the participating MSMEs operate under batch (53%) or job (40%) production types, with 27% employing project manufacturing and 13% a line process. A number of the participating firms indicate that they deploy a combination of production types.
- The three main industry sectors represented are manufacture of fabricated metal products (19%), manufacture of computer, electronic and optical products (14%) and production of machinery and equipment (13%), with the sample covering 17 sectors represented by distinct SIC codes.

Operations Directors and Managing Directors represent the two main groups of specific survey respondents, representing 38% and 26% respectively. The 17 senior representatives of the MSMEs participating in the follow-up interviews, all but two operated at either CEO or Director level.

Given the absolute survey size and percentage response rate, no claim can be made that the sample is truly representative of the UK MSME population, but nor is there any desirability on behalf of the authors to achieve generalisability from the work presented. However, it is reasonable to claim that the participant base in both parts of the study are diverse, covering numerous sector attributes, despite the relatively small response rate from what is seen as a challenging sector to access (Dennis, 2003). As such, the study offers both a depth of findings through method of enquiry and potential resonance with the broader MSMEs sector through this participant composition and contribution.

### 4.2.Frequency of manufacturing strategy review

The interviewed participants from the MSMEs typically tended to view "*manufacturing strategy*" as synonymous to the overarching "*business strategy*", using the two terms within the interviews interchangeably. Based on this experience, it would be reasonable to assume that senior management within these MSMEs do not necessarily distinguish corporate level strategy from their functional level manufacturing strategy.

From the survey of the 104 MSMEs, a majority, 59% of the manufacturers have indicated their organisations adopt an on-going approach to manufacturing strategy review. The overwhelming majority of the remainder adopt more periodic approaches, almost evenly split between MSMEs undertaking this once, twice or three times a year, as shown by Figure 1. From a positive

perspective, only 4% of the surveyed manufacturing MSMEs never subject their manufacturing strategy to review. These different levels of strategy review had no significant association with the level of change of involvement by the key functional groups or managerial employees, the correlations ranging from –0.186 to 0.108. The interviews suggest an upturn in terms of the extent and formality of this review process; examples of interview responses are "*a very formal strategy it goes up at every quarterly management meeting and we review how we're doing and how we can do better"* and "*it's certainly formalised and documented on a monthly basis*". The changes in approach to review being driven by radical changes resulting from the external environment have led to further comments including "*we are probably doing it more frequently since the start of the recession because we were trying to understand what was happening in the marketplace*". Interestingly, the rate of manufacturing review reports displayed weak and statistically significant association with the various items in the study assessing internal changes in staffing and external drivers covering markets, industry and government policy. We could assume here that the increases in review and formality have prompted for many of the MSMEs by critical events or incidents rather than recognisable trends or shifts relating to key internal or external drivers.

**[Figure 1 here]**

From the senior managers' interviews, three key issues emerge in relation to the manufacturing preview process; timing, level of review process formality and review implementation. The related findings here do point to variation in practice. For some MSMEs, the environmental turbulence caused by the Great Recession led to change in timing and importance in subsequent years. Formal strategy review has by tradition taken place annually, underpinned by relatively informal and undocumented amendments to the manufacturing strategy. The latter has tended to be both ad-hoc and on-going. Despite this sense of informality within the sector, there is still tangible evidence emerging here of formal manufacturing strategy formulation within a significant number of the manufacturing SMEs. The planning process is accompanied by some cynicism around its effectiveness, with a preference and a necessity for fluidity and flexibility within the process, given managerial resource availability relative to the size of the manufacturers concerned. From the managers' interviews: "*we used to up to maybe up to last year, we would have a have a formal strategy process where we were developing the business from a strategic perspective and that was a monthly development of the strategy. Probably since the sort of third quarter of last year we've done a lot less of that just cause we're firefighting and we had a couple of big strategic opportunities on the on the radar now, which will*

*significantly change business. It's gone from strategy to project implement*". To support effective strategy implementation, these MSMEs have sought to embed their manufacturing strategy by means of formal communication methods and in tandem have raised expectations of employee accountability across their organisations.

### 4.3.Role of the key business functions

The survey findings from the 104 MSMEs indicate the relatively dominant role of marketing/sales in the manufacturing strategy review, followed by the involvement of the senior management team and finance function. In contrast, the human resource function has witnessed the smallest relative change in involvement between pre- and post-Great Recession, as indicated by Figures 2 and 3.

### 4.4.Senior Management

Comparison of senior management involvement in the strategy review process pre-Great Recession and in the intervening time period provides a bimodal distribution from the survey respondents, with 39% citing the same level of involvement and 34% taking a much greater role (59% participating more in total), with only 3% indicating a decline in level of involvement levels, as presented in Figure 2. In terms of the issues that are receiving greater attention in more recent times, on-going rises in energy costs and the pursuit of alternative and greener energy sources dominate, as does the ever increasing importance of customer networking, the latter capturing both existing and newer client bases with the desire develop long-term customer relationships.

**[Figure 2 here]**

Whilst the changing levels of the senior management team involvement displays no association with the frequency of review, it does exhibit strong and statistically significant association with the changing levels of involvement with managers from the key business functions; marketing/sales ($r = 0.547$, $p = 0.000$), logistics and the supply chain ($r = 0.586$, $p = 0.000$), and in particular, the finance function ($r = 0.616$, $p = 0.000$). In terms of the external drivers that could impact on greater senior management involvement, only changes in competition in foreign markets ($r = -0.299$, $p = 0.009$) displayed any significant association with increase top-team involvement in strategy review. This negative association (based on the presentation of the implemented scales) would suggest greater involvement as the foreign markets exhibit greater levels of change in the time period since the end of the Great Recession.

**4.5.Marketing/Sales**

The survey suggests the marketing/sales function has greater involvement in the steer of manufacturing strategy within the MSMEs in more recent times, with 16% of respondents pointing to constant involvement and an up-turn in participation being evidenced by a further 54%, as shown in Figure 3.

**[Figure 3 here]**

The study interviews provide context for this greater involvement, with support for the function's increased relevance post-recession. Indicative quotes from the QUAL data: "*marketing's really starting to take off*", "*the marketing, sales is much more involved*" and "*six years ago we didn't do any marketing and sales really*". The environmental turbulence caused by the Great Recession informed change in the focus for the marketing function, this is well documented by the following MSME senior manager: "*The key differential is that pre-2008 I would describe this business as an operational-led business. And where we are right now is striving to be marketing-led* […] *back in 2008 we didn't have a marketing department. Now we've got a dedicated marketing department, in fact it commands a significant amount of my attention*".

The role played by marketers in providing a source of competitive advantage during the economic downturn is highlighted within the interviews of the QUAL data, for example "*most companies have slashed training budgets, have slashed marketing budgets, slashed travel budgets, and they're not seeing the customer. And we've gone the opposite way which is where more networking, more prospect visiting, more marketing, more training, more anything that has to do with direct engagement with customers, we're doing more of now than we did three four years ago. We're funding that because we're growing".*

The reliance by MSMEs on senior manager personal networks has been recognised as a source of long-term market advantage. The senior managers interviewed here recognise that greater investment and participation in marketing is necessary for growth, with shift changes in market position emerging from these changes to role input. Quoting directly from the data: "*we're always looking for niche markets because there's more there's more margin in them. The big volume markets there's very little margin in them these days*". The importance of existing personal networks and senior management participation in associated customer relationship

management was also raised in the previous section through consideration of the emerging and increasing senior management team contribution.

The contribution of marketing to the manufacturing strategy process exhibits both market and customer led considerations, examples being "*the customer doesn't necessarily want us to see us to roll up to his door and start preaching the Lean principles. It doesn't mean anything to him. What the customer does want to see is more of the four P's. More of the innovation, more of what are we going to do for him as a business for him to make more money. That is marketing, it's not Lean. Lean's not going to help him marketing will*" and "*the product cycles are shortening as with every business, the product cycles are probably down to five years now when they used to be 7, 8, 9, 10 years you could sell them the same product*".

The increased importance of marketing as a strategic driver within these MSMEs has led to various interventions that have enhanced its presence in the MSME leadership in the years post-recession. These include building dedicated marketing teams and positioning the marketing manager within the senior management team, and employing consultants or equivalent external clients to enhance the skills of employees in marketing roles. Internal developments have been enhanced by establishing communication paths between the marketing, product design and manufacturing functions within the MSMEs, thus demonstrating multi-functional collaboration. A range of outward-facing activities have emerged including the development of focused promotional strategy to support the MSMEs at trade fairs, identification of product application in new markets and promoting success stories of product applications through contribution to trade publications aimed at relevant national and international audiences. Other external activities involve enhancing customer relationship management, this being supported further by shifting the internal perception of customers to being receivers of services built around product solutions rather than being considered more crudely as a component of the wider supply chain. Whilst it has significant association with increased top-team involvement, the change in role for marketing/sales in terms of strategy review is significantly correlated with that reported for the logistics/supply chain function ($r = 0.627$, $p = 0.000$). It has also demonstrated significant impact with changes in domestic markets ($r = -0.293$, $p = 0.000$), changes in international markets ($r = -0.255$, $p –= 0.027$) and quality of suppliers ($r = 0.241$, $p = 0.015$). These correlations suggest that greater increase in both domestic and international markets has led to a greater role in strategy review for the marketers, whilst a diminution in the quality of suppliers available to the MSMEs is also related to an upturn in their involvement.

**4.6.Finance**

Broadly comparable with marketing/sales, the role of the finance managers demonstrates within the surveyed MSMEs indicates greater involvement within the manufacturing strategy process in the years after the Great Recession, the distribution of change pre- and post-recession being presented in Figure 3.

Involvement in the more recent time period is constant within 18% of the surveyed MSMEs with a further 44% exhibiting higher engagement with the manufacturing strategy review process and, 32% of the MSMEs indicating that their involvement has stayed at the same pre-recession levels for their finance managers. There are only 5% of the MSMEs alluding to reduced engagement or no involvement in these activities. Finance is the function where change in strategy involvement displays the most significant association with changes in role for the to-team.

The study interviewees place the role of finance in these processes at an equal level with other key business functions, with interviewed managers suggesting "*finance has become a focus throughout the recession very much so*", although "*finance are part of the team not running the team*". The greater role afforded to the finance function is linked to specific outcomes of the recession. These include supporting businesses with reduced profit margins "*we have seen some erosion of margins*", "*it bothered the cash flow*" and "*without the finance you can't actually do anything. You can't develop the business*" being outcomes highlighted. Sources of external funding being reduced or disappearing altogether and a reluctance by the banks to continue to invest and support the MSMEs also represent key challenges that require financial expertise and an enhanced input into the review and development of manufacturing strategy.

The functional role of finance being extended to the strategic level has allowed these MSMEs to formulate strategies in response to hostile private investors, as well as in response to more fluid customer behaviour and associated market volatility. Evidence in supporting this statement emerge from the study interviews: "*basically partly because of the people we're now dealing with* […], *are more powerful and what you tend to find in the bigger organisations is you and I can have a conversation at our level, and they'll say right deal's done but then they'll*

*go and put that on the procurement manager's desk and he'll want to be able to go back to his boss and say well I got another one per cent out of it so. And so with the bigger corporations you're dealing with more negotiations with different people. And everyone wants to be able to show they've managed to hive a little bit more off so that's become a lot more involvement*", "*we needed a lot more internal financial control and inputs to ensure we could continue trading with customers who were in these industries and regions which just overnight got wiped out for credit insurance*" and "*the banks won't take any risks whatsoever cause they're all frightened of losing their jobs. So we're running with half the working capital that we had three years ago, and we've doubled in size, so we have to be very careful now in the sort of projects we take on*".

Reduction in sources of finance and on-going market volatility has prompted MSMEs to put in place various strategic initiatives. These include tightening of control and increased examination of the companies' operational costs, for example "*finance is more involved for keeping a very close monitor on what you spend*" and "*there's much more close scrutiny on the cost of the manufacturing"*. The channels of communication between the financial function and its manufacturing counterparts have been enhanced to deliver a closer relationship between the disciplines, this being evidenced by the application of more detailed reporting systems; "*we have cost down project teams who are sitting together saying these are the products how do we drive the costs down to this so the financial people are part of that integrated understanding how it goes on, we've improved our whole reporting package*". Enhancing research skills to support business forecasting has also been recognised by the participating MSMEs. Key associations involving the changing role of finance in manufacturing strategy review include competition in foreign markets ($r = -0.231$, $p = 0.046$) where increasing market competition has led to increased involvement, profit margins ($r = 0.261$, $p = 0.008$) and quality of suppliers ($r = 0.233$, $p = 0.019$), where respective decreases in profits and supplier quality has prompted greater finance intervention in the strategising processes.

### 4.7.Supply Chain Management

From the QUAN data obtained by the survey, more than three quarters of the participating organisations suggest that the involvement of their logistics and supply chain function is at either the same or a slightly increased level of participation in supporting the manufacturing strategy review process compared with the pre-Great Recession era. The distribution of responses is presented in Figure 3.

The proportion of MSMEs' supply chain managers exhibiting greater involvement in the strategy review and implementation post-recession is less than that exhibited by counterparts from either marketing/sales or finance, with constant involvement being particularly smaller for managers in this function. Where the MSMEs suggest greater involvement in the review of strategy from these specialists, their contribution is driven by challenges around poor product quality supply and diminishing supplier bases caused by the turbulent environment of the Great Recession. This led in previous suppliers ceasing to exist and increases in customers' demand for deliveries that are in smaller batches but in greater ordering frequency. From a strategic perspective, the on-going contribution to review has led these specialist managers being given increased responsibilities around providing an evaluation of existing procurement and purchasing requirements, identifying and building relationships with sustainable suppliers and locating more cost effective shipment methods for supplies and finished goods. A more prominent role and greater participation is welcomed by senior managers indicating "*supply chain and logistics, probably needs to be much more involved*". Alongside its significant correlation with the changing role of marketing/sales, the changing contribution of logistics/supply chain management to manufacturing strategy review is significantly associated with competition in national markets ($r = -0.274$, $p = 0.005$) and quality of suppliers ($r = 0.246$, $p = 0.013$). The former indicates that tighter domestic markets is leading to greater functional input at the strategic level, whilst the loss of quality suppliers during the period of recession has prompted their greater decision-making involvement in the subsequent time period.

### 4.8.Human Resource Management

The majority of the participating MSMEs, 51%, allude to comparable levels of strategy development and review involvement pre- and post-Great Recession for their human resources function. Still, it worth noting that more than one in three of these MSMEs indicate some level of greater participation. In comparison with the other key business functions considered in the survey, the proportion of MSMEs, at around 9%, who make either no contribution or less than provided pre-recession to the review of manufacturing strategy, represent the greatest percentage of none or reduced involvement, Figure 3 presents the distribution of responses.

For the MSMEs exhibiting greater contribution to manufacturing strategy review, a range of drivers emerged from the interviewees that contributed to this study. At the early stage of the recessionary period, many of the MSMEs had to make redundancies, although later, with the increase in manufacturing orders from early 2011 onwards, increases in employees required

started to emerge. During this upturn in levels of employment, recognition has been given within the MSMEs to a skills deficit amongst significant numbers of newly employed staff, resulting in increased formal training interventions. Uncertainty within the broad MSME sector has led to relatively low salary inflation, which more recently, has resulted in greater levels of pay-related bargaining between employers and employees and hence a more strategic role for the HRM function is starting to emerge. These changes have support from the survey, where the shortage of managerial staff ($r = -0.316$, $p = 0.001$) and shortage of administrative staff ($r = -0.268$, $p = 0.006$) have both had significant association with the changing involvement of the HRM function in contributing to manufacturing strategy review (as measured on a scale from constant to no involvement), these representing the strongest correlations with the change measured for the HRM function, although shortage of skilled staff exhibited no significant association here ($r = -0.146$, $p = 0.144$). For each of the employee categories considered here, the higher the impact of their shortages, the greater the HRM functional involvement in the strategy review process.

### 4.9.Research and Development (R&D)

The emerging role of R&D was clear from the QUAL data, with recognition given to its increasing importance, for example "*putting the focus back on R&D*" and "*we don't actually spend anything like the amount of money on sales that we spend on research and development each year*" being two particular standpoints. As the MSMEs have sought greater sophistication in the way they conduct their businesses, they have reported specific R&D investments to support initiatives including enhancing customer satisfaction, reduction in manufacturing lead-times and the realisation of concurrent engineering. As reported from the interviews: "[what] *we tried to do was to integrate the people in the design and manufacturing process much earlier in the sales process. Because we found there was a demand for a faster turnaround etc., and we've got skilled sales guys out there but they had a limited technical background and selling our products is very technical product, and they historically used to do the specification with the customer. But we found that lengthened the problem because when it came back into the design and manufacturing process some of the things they'd specified weren't actually possible. We had to stand on our heads to get round it all cause we'd need to renegotiate. So what we've done is sucked the manufacturing people further forward in to the process so they're involved in the specification process, it's much more detailed and technically specified than historically, consequently we can then process the thing through the manufacturing much faster. So we've got a quicker turnaround. We've reduced our average turnaround of all this significantly. Ten*

*years ago it was always three to four months and now it's frequently less than four weeks. We're getting everybody closer to the market now*".

## 5. DISCUSSION AND CONCLUSIONS

The findings presented here have considered the changes pre- and post- Great Recession of the key non-manufacturing business functions and senior management in the manufacturing strategy formulation process within the MSME sector. It is, however, important to note, as mentioned at the start of the findings, senior managers from these participating MSMEs made no distinction between "*manufacturing*" and the overarching "*corporate/business*" strategy as it is evident from the primary QUAN and QUAL data. It is interesting to note that the frequency of attention to the review process stands independent of the changing roles of any individual function or trends in the market, industrial sector or government policy, although notable incidents are cited as reasons for greater attention to formulating strategy.

The interface between manufacturing and marketing function is long understood, and as such, has received consideration within the literature associated with the formulation of manufacturing strategy, and perhaps as expected in more challenging times, this appears to be the business function whose role has increased the most as part of this process. The crucial, outward facing role performed by the marketing function is endorsed by Hill (2009:46) who suggests "*they* [marketing and manufacturing] *constitute the basic task in any business – the sale and delivery of products*". The finding is also in line with the recent work by Sardana et al (2016) who surveyed the strategic alignment and integration of manufacturing firm's operations, market responsiveness and performance. Perhaps unsurprisingly, the increased role of the marketing function in this study is correlated with more challenging domestic and international competition and a reduction in supplier quality. Schroeder et al. (2011) further recognise the marketing-manufacturing functional connection, with marketing defined as the recipients of customer requirements and expectations and subsequent messenger to the manufacturing function by communicating delivery expectations. Where an economic downturn is defined by relatively high market volatility and uncertainty, the response from by UK manufacturers has been to invest in both marketing and training activities (Geroski and Walters, 1995; Geroski and Gregg, 1997). With respect to the major economic downturn from the Great Recession and beyond, this study demonstrates that MSMEs have followed suit by increasing their marketing budgets, and where possible, have put in place dedicated marketing/sales teams and have

engaged in various promotional activities that have sought to develop long-term customer relationships. The long-established and mono-manufacturing culture that has prevailed in these MSMEs has started to erode, consistent with the "*servitisation*" recognised by Neely (2008), where the higher level marketing agenda is moving towards parity with its manufacturing equivalent within the setting of the MSMEs. This outcome further accords with the work of Cagliano et al. (2001) who argued that manufacturing-centred attributes such as technical expertise, operational excellence and manufacturing flexibility will not support competitive advantage in isolation as markets become more volatile and competitive and take on increasingly global contexts. The growing role of the marketing function in contributing to the review of strategy supports the conclusions presented by Ipsos MORI (Deltek, 2012) from a North European manufacturing perspective, where customer satisfaction and the building of long-term customer relationships represent the second most important business priority in the post-Great Recession era.

The lesser involvement of the supply chain function in the strategic review process debates compared with their marketing counterpart has been recognised within this study, despite established understanding of the importance and expectations placed on efficient supply chain by contemporary manufacturing organisations (Harrison and van Hoek, 2011; Hill, 2009). It is worth noting that studies on larger, more complex organisations, suggest that a "*unionist paradigm*" is more prevalent and is regarded as a key strategic driver for supply chain improvement and sustainability (Grant, 2012; Oglethorpe and Heron, 2010). Hayes et al. (2005) report on the bullwhip effect creating a significant and challenging environment within the supply chain. First-tier suppliers who deploy demand forecasting and develop challenging customer schedules make a significant impact on the work of their lower-tier suppliers. MSMEs located towards the centre of such supply chains face a difficult environment characterised by shortage, delays and a reduction in supply quality, the latter being seen to correlate in this study with a higher (strategic) level of involvement for the supply chain function. These conditions are worsened by economic recessions and associated changes in market conditions. MSMEs have sought to counter these problems by initiating strategic reviews of their supply chain operations. The outcomes of these reviews include selecting and building relationships with sustainable suppliers and reviewing existing procurement and purchasing requirements, initiatives recognised by this study and building upon recent findings of Sahin and Robinson (2005) and Gunasekaran and Ngai (2009). It is particularly relevant for make-to-order manufacturing types (these being arguably commonplace within MSMEs), which are dependent

upon information sharing at a high level and quality between the partners within the supply chain to ensure control and appropriate levels of responsiveness and flexibility in delivery performance. This thereby explains the significant level of association identified between increases in marketing/sales and supply chain the review of manufacturing strategy.

From a manufacturing systems perspective it should not be underestimated the emerging application of lean thinking on operations under pressure and the explicit benefits to the organisation of implicit moves to become more efficient. This may be actioned by moving away from poor service through risk aversion and hedging which further promote high inventories, unexpected costs, constrained growth within Value Chain Analysis environments, slowing inventory turns and restricting opportunities to increase marginal returns of investments as a result (Palevich, 2012). However, SMEs becoming lean is almost secondary to the fact that their business strategy drives them to become lean, thereby increasing inventory turns and by extrapolation that this emerging leanness trends will continue, and that gross margin return on investments will increase due to higher inventory turns and shortened cash cycles.

The role of the finance function is essential in the sourcing and deployment of the necessary capital investment required to support MSMEs' manufacturing activities (Schroeder et al., 2011). The MSMEs participating in this research have indicated an increase in involvement for their financial management function, this increasing importance being driven by the growing scarcity of external funding, whilst the management of cash flow within the respective organisations has become more critical in the time period since the Great Recession. This alignment of financial priorities accord with the opinions expressed both by the Bank of England (2009) and the IMF (2009) about the UK banking sector's unwillingness to lend money to its country's SME sector during and since this major period of recession. The UK financial sector shrank by 5.2% at the beginning of 2008 (quarter1 2008 – quarter2 2009), after growing by 4.1% in the previous calendar year, leading to a shrinkage in the sector's finance which had a knock-on impact on its client base, the UK manufacturers included. Being forced to work within such tightened parameters, the MSMEs have implemented systems to exercise greater control and assessment of operational costs, which would perhaps explain the correlation between the increased role in strategy review for finance for those MSMEs challenged more by profit margins and supply quality. The value of effective financial management systems within SMEs is advocated by Kitching et al. (2009b), especially in periods of economic recession. The relevance of such reporting systems in supporting manufacturing companies has led to a

significant proportion of SMEs in Northern Europe making the necessary investments (Deltek, 2012).

The human resource management teams provide a range of managerial interventions including leading on recruitment, selection, performance evaluation and employee training, all of which are essential in underpinning the effective execution of the manufacturing process (Jayaram et al., 1999; Schroeder et al., 2011). The Great Recession forced the UK MSMEs to reduce employee levels in the immediately years after, although job reductions are much smaller compared with the downsizing that accompanied previous periods of economic difficulty (Kitching et al., 2009a). The Chartered Institute of Personnel and Development (CIPD Outlook, 2012) reports that the UK manufacturing sector has a smaller redundancy agenda compared with the UK private sector in its entirety, with 43% of manufacturers employing a staffing level that exceeds the capacity required to meet current levels of output. The finding complements the work by Lai et al (2016) who also identified that SMEs are less likely to reduce their human resource during turbulent times. Moreover, this strategy concurs with future growth expectations for UK manufacturing, with Engineering UK (2012) forecasting a further 2.74 million job openings within the sector by the 2020s. However, from the start of the recession to present day, a declining skills base further compounded by only modest supply of newly qualified engineers has given the human resources function in MSMEs particular priorities, and kept its presence at the strategic decision-making level within this sector at a level comparable to that pre-Great Recession. These two challenges do, however, present the opportunity for greater involvement with higher-level decision-making for the HR function in the relatively near future, and this is realised in the MSMEs surveyed where more acute shortages in key staffing roles has led to the function taking on more of a role in strategy development. This driver for HRM involvement is less industry specific and much more explicitly focussed to the typical activities of the role.

**[Figure 4 here]**

The findings presented in this paper and the associated discussion provides a potentially useful contribution to understanding of how MSMEs encourage cross-functional relationships and build these into their on-going review of strategy as a counter to significant challenges in the more recent years. Figure 4 represents the multi-functional input into strategy review that has emerged from the primary research. This presentation, being derived from the survey and

related MSMEs interviews, combines to propose best practice in terms of multi-function involvement. It is equally interesting to see that whilst frequency of strategy review appears independent of trends in manager involvement and deployment and key trends external to the business, these trends do play a part in helping define an increased role for the functions, where industrial changes dominate, with little part played by market or government policy.

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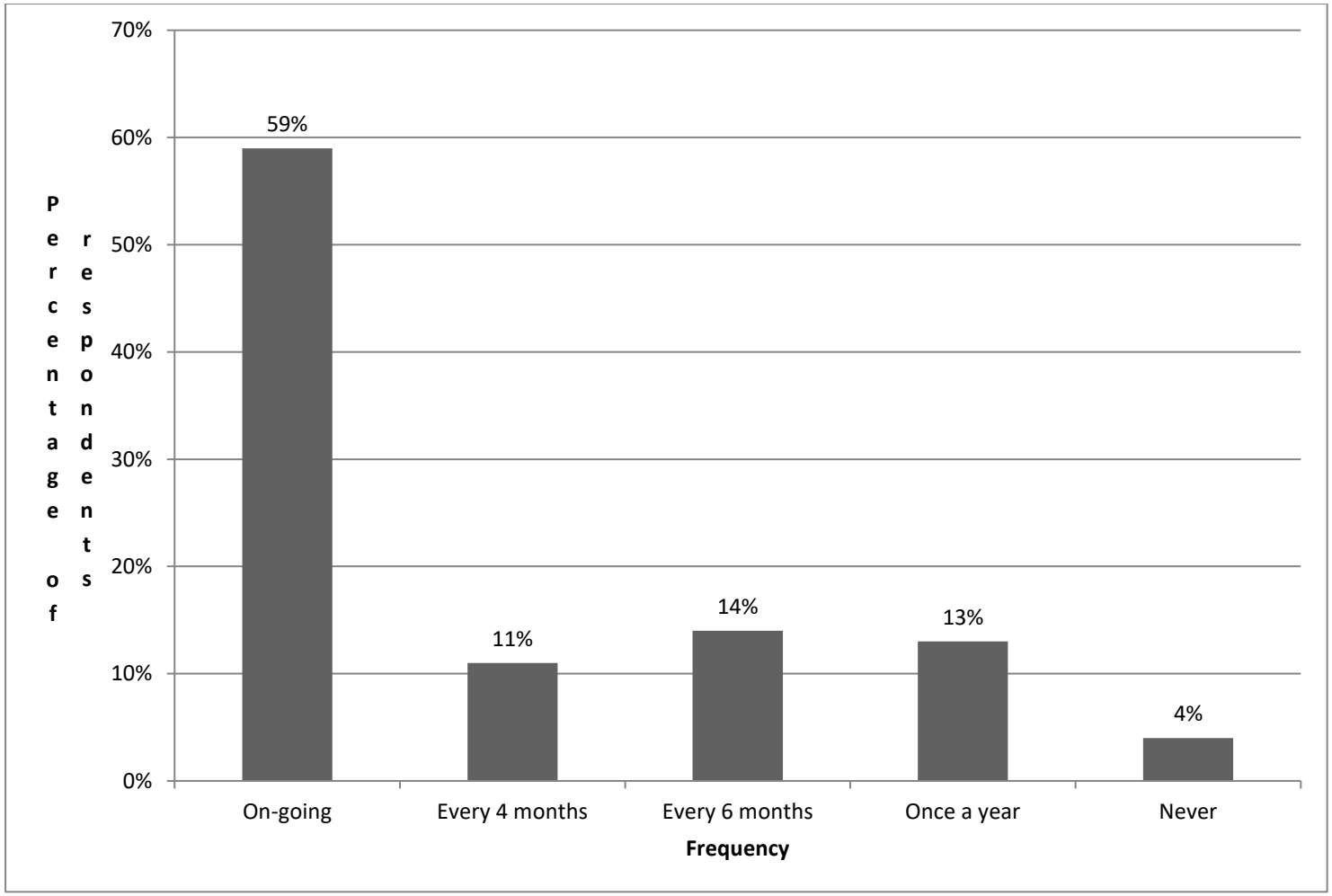


*Figure 1. Frequency of Manufacturing Strategy Review*

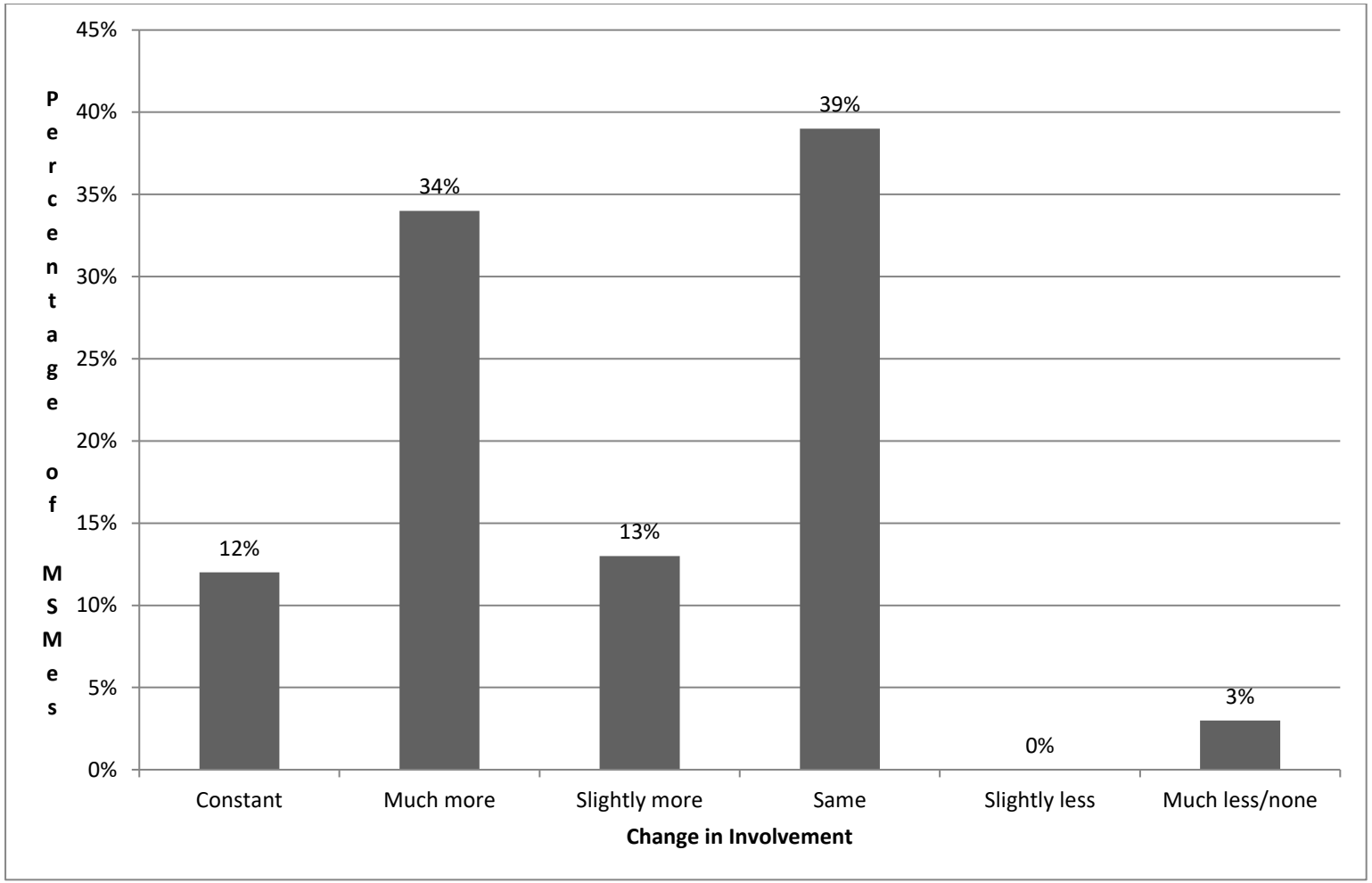


**Figure 2. Involvement of Executive/Top Management Team**

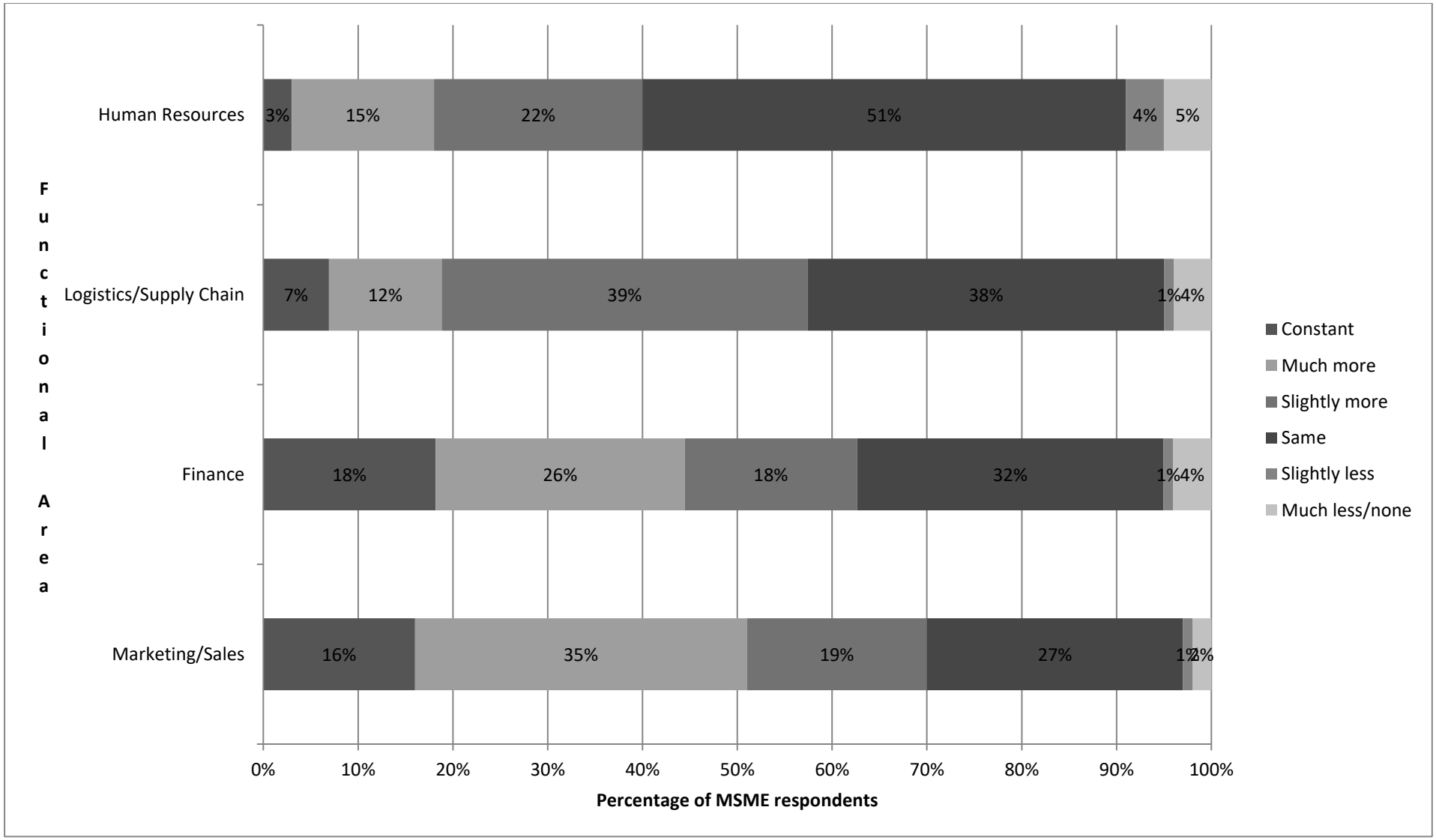


**Figure 3. Involvement of the key functions**

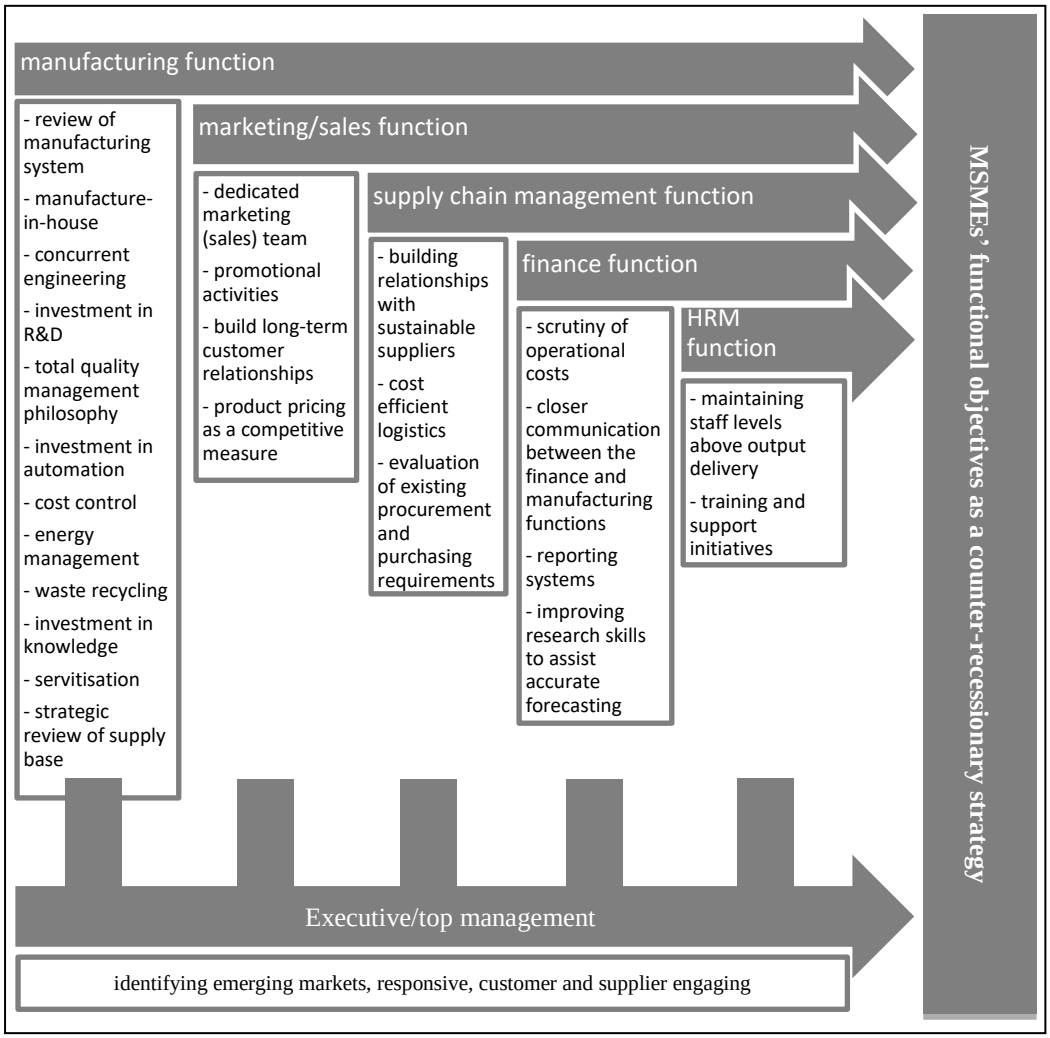


**Figure 4. Cross-functional contributions to business strategy to counter environmental turbulence**